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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/829,505	04/09/2001	Chung-Hsing Tzu	004728.P054	6728

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EXAMINER

VU, QUANG D

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 03/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/829,505

Applicant(s)

TZU ET AL.

Examiner

Quang D Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Specification***

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

The specification never discloses the bonding wires include gold as claimed in claim 12.

The specification never discloses the bonding wires include gold as claimed in claim 23.

The specification never discloses the bonding wires include gold as claimed in claim 27.

### ***Claim Objections***

Claim 18 is objected to because of the following informalities: In line 10, the phrase "...said HSQFN package" is unclear as to what is it. The phrase should be rewrite as "...said High Stand-off Quad Flat Non-leaded package". Appropriate correction is required.

Claim 26 is objected to because of the following informalities: In line 10, the phrase "...said HSQFN package" is unclear as to what is it. The phrase should be rewrite as "...said High Stand-off Quad Flat Non-leaded package". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 9-11, 14,16-20, 22, 24 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,420,779 to Sharma et al.

Regarding claim 9, Sharma et al. (figure 1) teach a semiconductor package, comprising:

a leadframe (120, 130, 140) having a die pad (120) and the leads (130, 140), wherein the die pad (120) is designed to carry a die (110) adhered thereon by adhesive material (160), wherein the die pad (120) and the leads (130, 140) are separated;

a plurality of bonding wires (170, 180) connected between the portions of the leads (130, 140) and the die (110) for electrical communication; and

molding compound (150) encompassing the die (110), the bonding wires (170, 180) and a first surface of the leadframe (120, 130, 140), leaving the terminal of the leads (130, 140) and the lower surface of the die pad (120) exposed out of the molding compound (150), wherein the exposed portions of the leads (130, 140) is used for communication terminal for the package.

It is inherent that the leads (130, 140) comprising the bonding pads because they provide connections between the wires and the external circuit.

It is inherent that the terminal of the bonding pads and the lower surface of the die pad exposed out of the molding compound for providing excellent thermal dissipation from the package since the structure of Sharma et al. is similar to the claimed structure.

Regarding claim 10, Sharma et al. teach the die (110) is attached by adhesive material (160).

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Regarding claim 11, Sharma et al. teach the adhesive material (160) includes epoxy (column 3, lines 48-49).

Regarding claim 14, Sharma et al. teach the molding compound (150) includes mold resin (column 4, lines 51-52).

Regarding claim 16, Sharma et al. teach the leadframe (120, 130, 140) comprises two of the leads (130, 140). It is inherent that the leads (130, 140) comprising the bonding pads because they provide connections between the wires and the external circuit.

Regarding claim 17, Sharma et al. teach the die pad (120) and the leads (130 or 140) are formed of same conductive material (column 4, lines 11-12). It is inherent that the leads (130, 140) comprising the bonding pads because they provide connections between the wires and the external circuit.

Regarding claim 18, Sharma et al. (figure 1) teach a semiconductor package, comprising:

- a die (110);
- a die pad (120) for carrying the die (110) attached thereon;
- a plurality of leads (130, 140) separated from the die pad (120);
- a plurality of bonding wires (170, 180) connected between the leads (130, 140) and the die (110) for electrical communication; and

a molding compound (150) encompassing the die (110), the bonding wires (170, 180), a portion of each said lead (130 or 140) and an upper surface of the die pad (120), leaving the terminal of each of the leads (130 or 140) and a lower surface of the die pad (120) exposed out of the molding compound (150).

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It is inherent that the leads (130, 140) comprising the bonding pads because they provide connections between the wires and the external circuit.

It is inherent that the terminal of the bonding pads and the lower surface of the die pad exposed out of the molding compound for providing excellent thermal dissipation from the package since the structure of Sharma et al. is similar to the claimed structure.

Regarding claim 19, Sharma et al. teach an adhesive material (160) adhering the die (110) and the die pad (120).

Regarding claim 20, Sharma et al. teach the adhesive material (160) includes epoxy (column 3, lines 48-49).

Regarding claim 22, Sharma et al. teach the die pad (120) and the lead (130 or 140) are formed of same conductive material (column 4, lines 11-12). It is inherent that the leads (130, 140) comprising the bonding pads because they provide connections between the wires and the external circuit.

Regarding claim 24, Sharma et al. teach the molding compound (150) includes mold resin (column 4, lines 51-52).

Regarding claim 26, Sharma et al. (figure 1) teach a semiconductor package, comprising:  
a die (110);  
a die pad (120) for carrying the die (110) attached thereon by an adhesive material (160);  
two leads (130, 140) separated from the die pad (120);  
two bonding wires (170, 180) each of which connected between one said lead (130 or 140) and the die (110) for electrical communication; and

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a molding compound (150) encompassing the die (110), the bonding wires (170, 180), a portion of each lead (130 or 140) and an upper surface of the die pad (120), leaving the terminal of each said lead (130 or 140) and a lower surface of the die pad (120) exposed out of the molding compound (150).

It is inherent that the leads (130, 140) comprising the bonding pads because they provide connections between the wires and the external circuit.

It is inherent that the terminal of the bonding pads and the lower surface of the die pad exposed out of the molding compound for providing excellent thermal dissipation from the package since the structure of Sharma et al. is similar to the claimed structure.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 12, 23 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,420,779 to Sharma et al.

Regarding claim 12, Sharma et al. differ from the claimed invention by not showing the bonding wires include gold. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the bonding wires include gold, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. In re Leshin, 125 USPQ 416.

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Regarding claim 23, Sharma et al. differ from the claimed invention by not showing the bonding wires include gold. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the bonding wires include gold, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. In re Leshin, 125 USPQ 416.

Regarding claim 27, Sharma et al. differ from the claimed invention by not showing the bonding wires include gold. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the bonding wires include gold, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. In re Leshin, 125 USPQ 416.

7. Claims 13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,420,779 to Sharma et al. in view of US Patent No. 6,294,830 to Fjelstad.

Regarding claim 13, Sharma et al. differ from the claimed invention by not showing the adhesive material includes silver epoxy. However, Fjelstad teaches the adhesive material includes silver epoxy (column 4, lines 56-57). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Fjelstad into the device taught by Sharma et al., since it improves heat dissipation from the chip.

Regarding claim 21, Glenn et al. differ from the claimed invention by not showing the adhesive material includes silver epoxy. However, Fjelstad teaches the adhesive material includes silver epoxy (column 4, lines 56-57). Therefore, it would have been obvious to one



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having ordinary skill in the art at the time the invention was made to incorporate the teaching of Fjelstad into the device taught by Sharma et al., since it improves heat dissipation from the chip.

8. Claims 15, 25 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,420,779 to Sharma et al. in view of US Patent No. 6,143,981 to Glenn.

Regarding claim 15, Sharma et al. differ from the claimed invention by not showing a solder ball formed on the terminal of the bonding pad. However, Glenn (figure 9) teaches a solder ball (60) formed on the terminal of the bonding pad (53). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Glenn into the device taught by Sharma et al. because it provides connection to the external circuit.

Regarding claim 25, Sharma et al. differ from the claimed invention by not showing a solder ball formed on the terminal of the bonding pad. However, Glenn (figure 9) teaches a solder ball (60) formed on the terminal of the bonding pad (53). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Glenn into the device taught by Sharma et al. because it provides connection to the external circuit.

Regarding claim 28, Sharma et al. differ from the claimed invention by not showing a solder ball formed on the terminal of the bonding pad. However, Glenn (figure 9) teaches a solder ball (60) formed on the terminal of the bonding pad (53). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate

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the teaching of Glenn into the device taught by Sharma et al. because it provides connection to the external circuit.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang D Vu whose telephone number is 703-305-3826. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

qv  
March 19, 2003

Steven Loke  
Primary Examiner

